

LISTING OF CLAIMS

1. (Currently Amended) A method for controlling an electroplating process, the method comprising:
 - (a) obtaining a sample of electrolyte from the electroplating process;
 - (b) analyzing the sample of electrolyte by mass spectrometry to obtain a mass spectral result;
 - (c) comparing the mass spectral result to a plurality of known mass spectral results; and
 - (d) adjusting conditions of the electroplating process in response to the comparison, wherein adjusting conditions of the electroplating process comprises adjusting electroplating apparatus hardware adapted to control one or more of the following: an electrical current flow, an electrical field shape, a voltage level, a wafer handling apparatus, and a relative orientation of an electrode with a counter electrode.
2. (Original) The method of claim 1, wherein the sample of electrolyte is obtained directly from a plating cell of the electroplating process.
3. (Original) The method of claim 1, wherein the sample of electrolyte is obtained directly from a separate sampling vessel of the electroplating process.
4. (Original) The method of claim 1, wherein the sample of electrolyte is obtained from a central chemistry vessel of the electroplating process.
5. (Original) The method of claim 1, wherein the sample of electrolyte is analyzed using atmospheric pressure ionization mass spectrometry.
6. (Original) The method of claim 1, wherein the sample of electrolyte is analyzed using at least one mass spectrometry technique selected from the group consisting of API-MS, Quadrupole MS, Ion Trap MS, Magnetic Sector MS, and Time-of-Flight MS.
7. (Original) The method of claim 1, wherein the plurality of known mass spectral results is stored in a memory device.
8. (Original) The method of claim 7, further comprising determining whether the mass spectral result falls within a specified tolerance of a target result that is one of the plurality of known mass spectral results.
9. (Original) The method of claim 1, wherein the plurality of known spectral results are provided for a plurality of compositions comprising at least one of organic plating additives and breakdown products of said additives.
10. (Cancelled)
11. (Currently Amended) The method of ~~claim 10~~ claim 1, wherein adjusting conditions of the electroplating process further comprises adjusting electroplating apparatus hardware ~~comprises~~ adjusting adapted to control an electrolyte composition.
12. (Currently Amended) The method of ~~claim 10~~ claim 1, wherein adjusting conditions of the electroplating process comprises adjusting the electroplating apparatus hardware ~~comprises~~ adjusting adapted to control an electrical current flow.

13. (Currently Amended) The method of ~~claim 10~~ claim 1, wherein adjusting conditions of the electroplating process comprises adjusting the electroplating apparatus hardware comprises adjusting adapted to control a field shaping apparatus.

14. (Currently Amended) The method of ~~claim 10~~ claim 1, wherein adjusting conditions of the electroplating process comprises adjusting the electroplating apparatus hardware comprises adjusting adapted to control a voltage level.

15. (Currently Amended) The method of ~~claim 10~~ claim 1, wherein adjusting conditions of the electroplating process comprises adjusting the electroplating apparatus hardware comprises adjusting adapted to control a wafer handling apparatus.

16. (Currently Amended) The method of ~~claim 10~~ claim 1, wherein adjusting conditions of the electroplating process comprises adjusting the electroplating apparatus hardware comprises adjusting adapted to control a relative orientation of an electrode with a counter electrode.

17. (Original) The method of claim 1, wherein, the mass spectral result is obtained for each cassette of wafers processed.

18. (Original) The method of claim 1, wherein, the mass spectral result is obtained for each wafer processed.

19. (Original) The method of claim 1, wherein, the mass spectral result is obtained multiple times for each wafer processed.